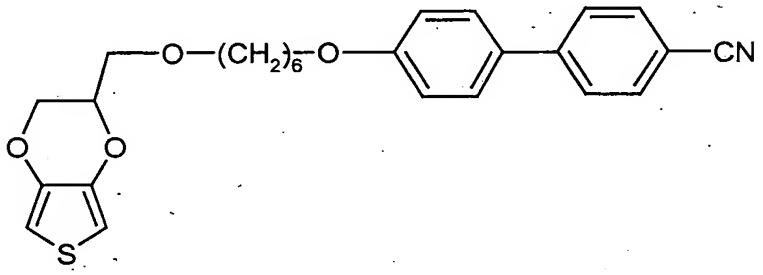
WHAT IS CLAIMED IS:

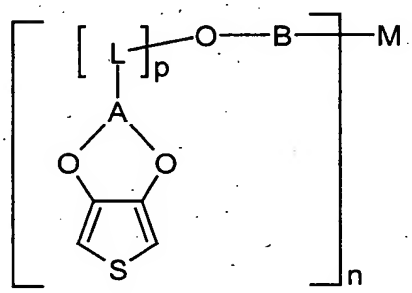
1. 3,4-Alkylenedioxythiophenes characterized in that they are substituted by a mesogenic group, and optionally via a bridging group

with the exception of the 3,4-alkylenedioxythiophene of the formula (i)



(i).

2. 3,4-Alkylenedioxythiophenes according to Claim 1, characterized in that they are compounds of the formula (I),



(I)

where

A is a C_1-C_5-alkylene radical which is substituted at any point by a linker L and optionally bears further substituents,

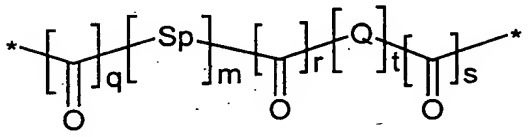
L is a methylene group,

p is 0 or an integer from 1 to 6,

M is an n-functional mesogenic group,

n is an integer from 1 to 8 and

B is a bridging group of the formula (B)



(B)

where

q is 0 or 1,

r, s are each 0 or 1, with the proviso that when r is 1, s is 0 and vice versa or both are optionally 0,

t is 0 or 1,

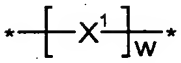
Sp is a spacer selected from the group consisting of substituted and unsubstituted linear or cyclic C_1-C_{20}-alkylene groups, C_5-C_{20}-arylene groups, C_2-C_{20}-heteroarylene groups in which from one to three heteroatoms selected from the group consisting of N, O and S can additionally be present in the heteroaromatic ring or ring system, C_6-C_{20}-aralkylene groups, C_2-C_{200}-oligoether and –polyether groups,

m is 0 or 1,

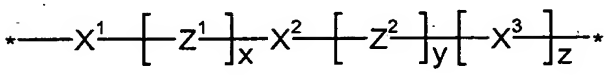
Q is O, S or NH.

3. 3,4-Alkylenedioxythiophenes according to Claim 2, characterized in that

M is an n-functional group of the formula (II-a) or (II-b),



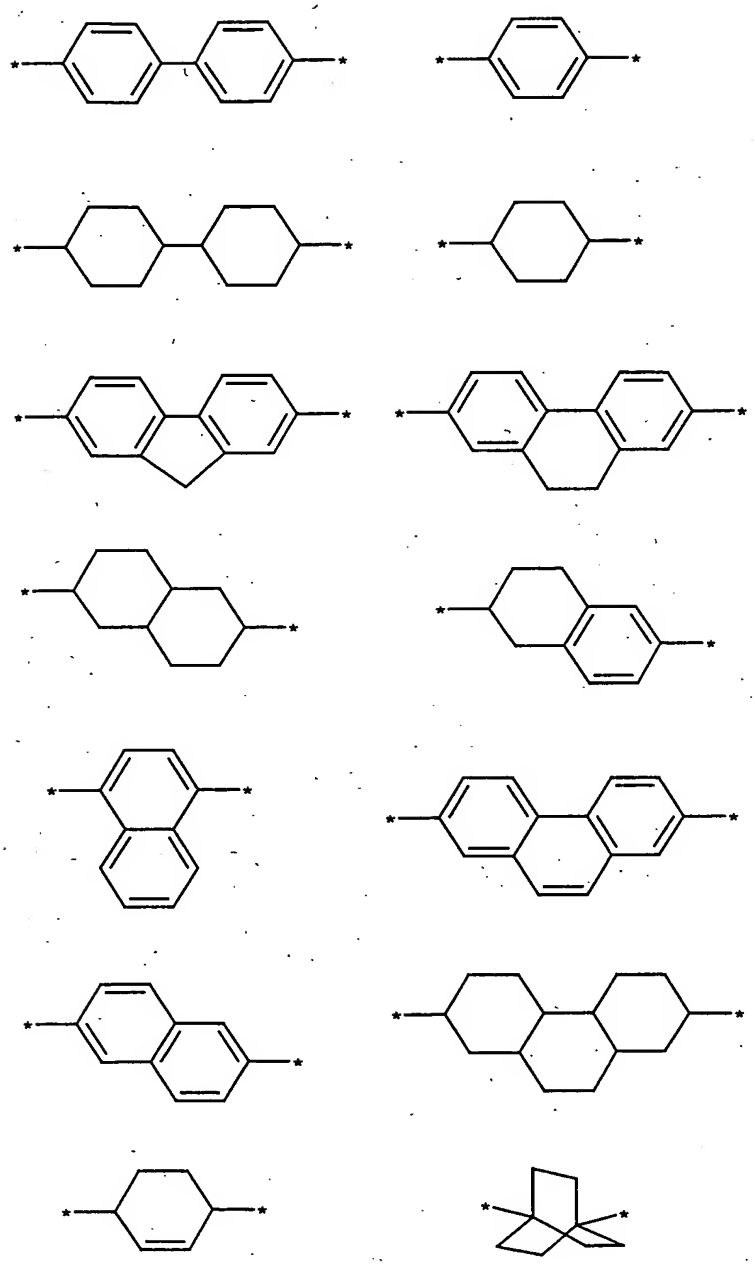
(II-a)

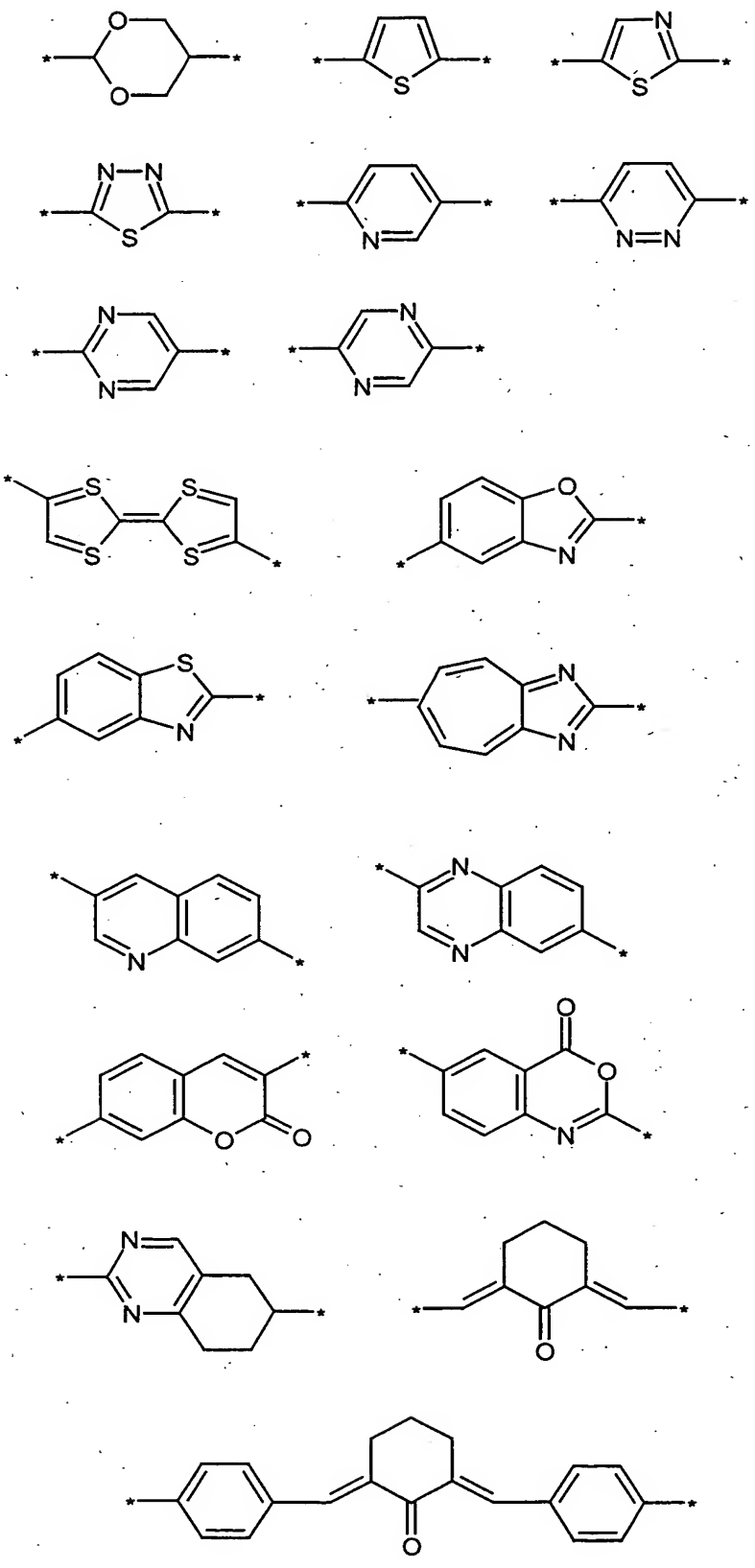


(II-b)

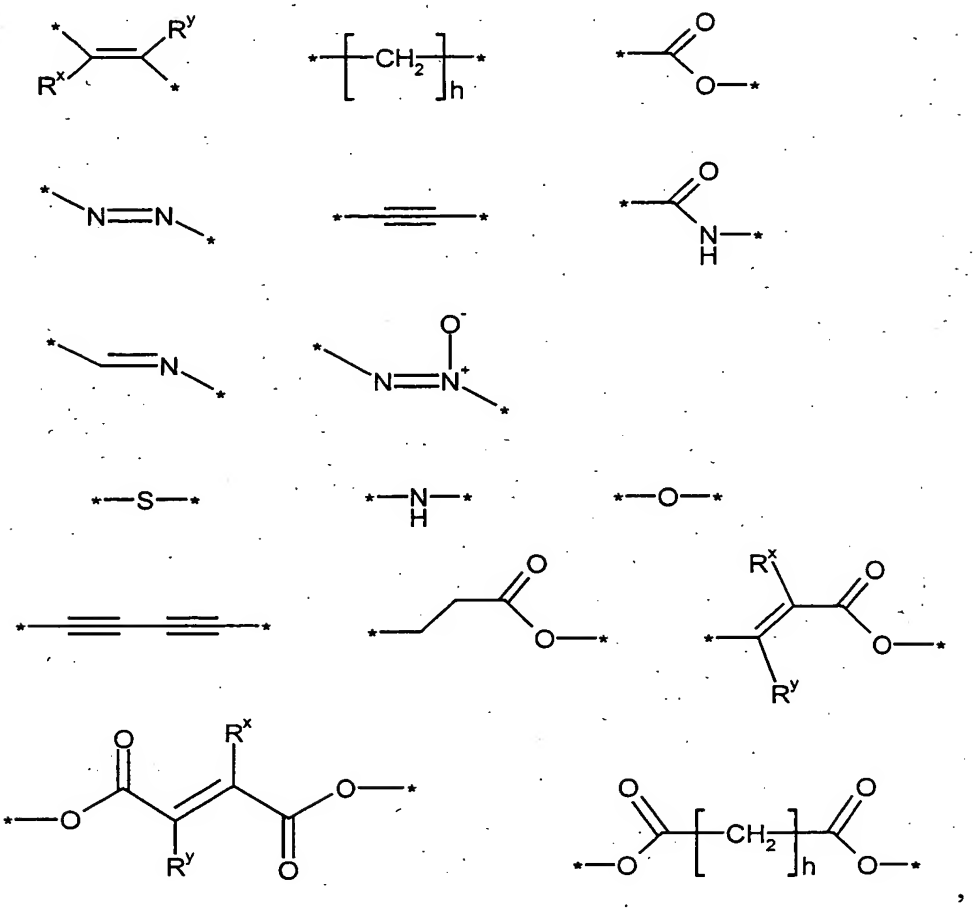
where

X^1, X^2, X^3 are substituted or unsubstituted structures selected independently from the group consisting of





Z^1, Z^2 are structures selected independently from the group consisting of



where

R^x and R^y are each, independently of one another, H, substituted or unsubstituted C_1-C_{22}-alkyl, C_1-C_{22}-haloalkyl, C_1-C_{22}-alkenyl, C_1-C_{22}-alkoxy, C_1-C_{22}-thioalkyl, C_1-C_{22}-iminoalkyl, C_1-C_{22}-alkoxycarbonyl, C_1-C_{22}-alkoxycarbonyloxy, a radical of an aliphatic C_1-C_{22}-alkanecarboxylic acid

or of acrylic acid, halogen, pseudohalogen, NO_2, a carboxyl group or a hydroxy group,

h is an integer from 1 to 10,

w is an integer from 1 to 5,

x, y, z are each, independently of one another, 0 or 1, and

n is 1 or 2, where

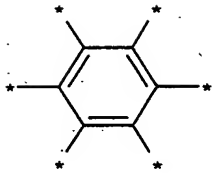
when n is 1, the group of the formula (II-a) or (II-b) bears a terminal group F at the linkage points denoted by *,

where

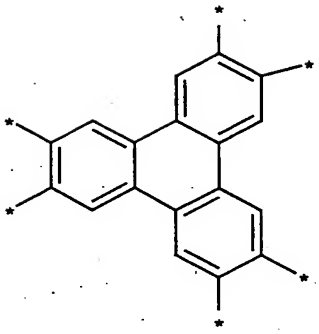
F is H, substituted or unsubstituted C_1-C_{22}-alkyl, C_1-C_{22}-haloalkyl, C_1-C_{22}-alkenyl, C_1-C_{22}-alkoxy, C_1-C_{22}-thioalkyl, C_1-C_{22}-iminoalkyl, C_1-C_{22}-alkoxycarbonyl, C_1-C_{22}-alkoxycarbonyloxy, a radical of an aliphatic C_1-C_{22}-alkanecarboxylic acid or of acrylic acid, halogen, pseudohalogen, a nitro (NO_2) group, a carboxyl group, a sulphonic acid group or sulphonate group or a hydroxy group.

4. 3,4-Alkylenedioxythiophenes according to Claim 2, characterized in that

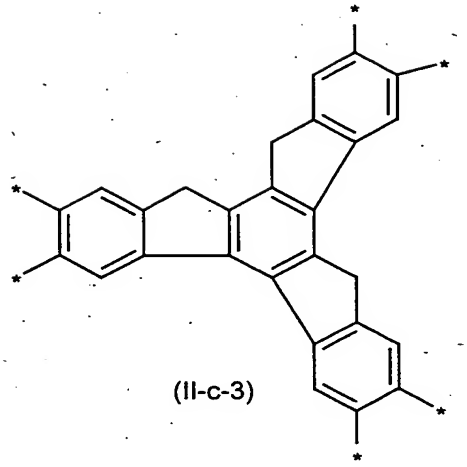
M is an n-functional group selected from the group consisting of the formulae (II-c-1) to (II-c-6),



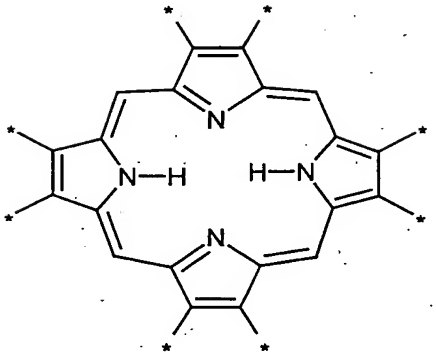
(II-c-1)



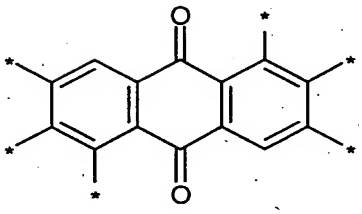
(II-c-2)



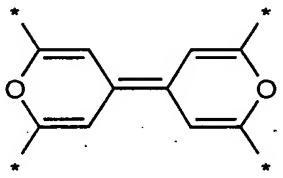
(II-c-3)



(II-c-4)



(II-c-5)



(II-c-6)

where

n is an integer from 1 to 8,

where

when n is an integer below 8, is selected from the group consisting of the formulae (II-c-1) to (II-c-6) bearing a terminal group F on the remaining 8 – n linkage points denoted by *,

where

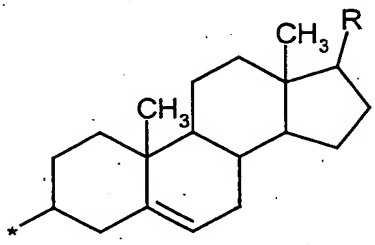
F is H, substituted or unsubstituted C_1-C_{22}-alkyl, C_1-C_{22}-haloalkyl, C_1-C_{22}-alkenyl, C_1-C_{22}-alkoxy, C_1-C_{22}-thioalkyl, C_1-C_{22}-iminoalkyl, C_1-C_{22}-alkoxycarbonyl, C_1-C_{22}-alkoxycarbonyloxy, a radical of an aliphatic C_1-C_{22}-alkanecarboxylic acid or of acrylic acid, halogen, pseudohalogen, a nitro (NO_2) group, a carboxyl group, a sulphonic acid group or sulphonate group or a hydroxy group.

5. 3,4-Alkylenedioxythiophenes according to Claim 2, characterized in that

M is a steroid radical or a derivative of a steroid radical.

6. 3,4-Alkylenedioxythiophenes according to Claim 5, characterized in that

M is a cholesteryl radical or a derivative of the cholesteryl radical of the formula (III-a),

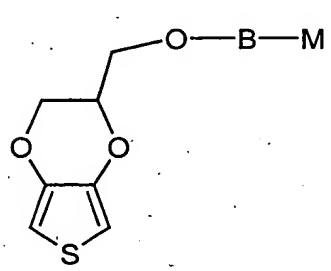


(III-a)

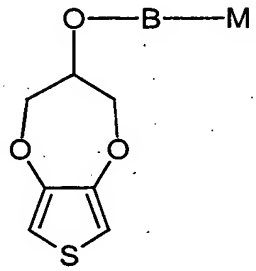
where

R is H, substituted or unsubstituted C_1-C_{22}-alkyl, C_1-C_{22}-haloalkyl, C_1-C_{22}-alkenyl, C_1-C_{22}-alkoxy, C_1-C_{22}-thioalkyl, C_1-C_{22}-iminoalkyl, C_1-C_{22}-alkoxycarbonyl, C_1-C_{22}-alkoxycarbonyloxy, a radical of an aliphatic C_1-C_{22}-alkanecarboxylic acid or of acrylic acid, halogen, pseudohalogen, a nitro (NO_2) group, a carboxyl group, a sulphonic acid group or sulphonate group or a hydroxy group.

7. 3,4-Alkylenedioxythiophenes or mixtures of 3,4-alkylenedioxythiophenes according to Claim 2, characterized in that they have a structure of the formulae (I-a) and/or (I-b),



(I-a)



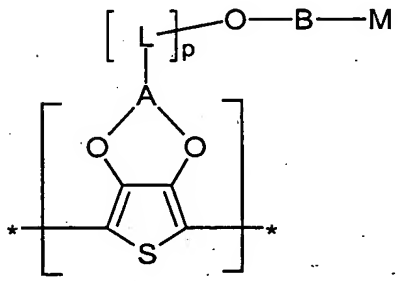
(I-b)

where

B and M are as defined in Claim 2.

8. A process for preparing polythiophenes comprising polymerizing 3,4-alkylenedioxythiophenes or mixtures of 3,4-alkylenedioxythiophenes according to Claim 1.

9. Polythiophenes, characterized in that they comprise recurring units of the formula (IV),

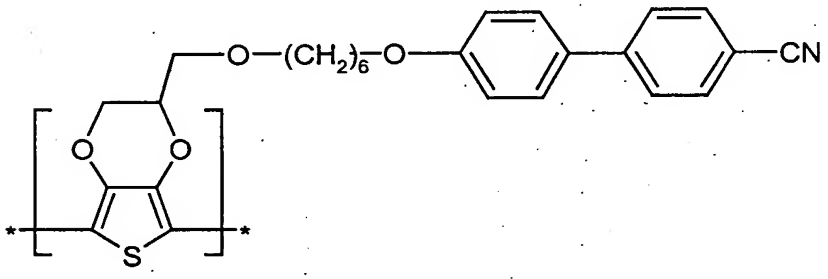


(IV)

where

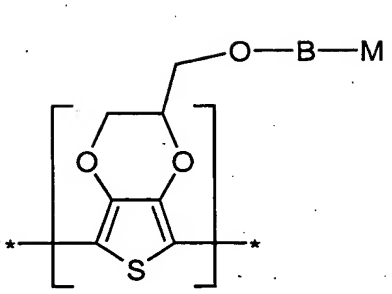
A, L, p, M and B are as defined in Claim 2,

with the exception of polythiophenes consisting of recurring units of the formula (ii)

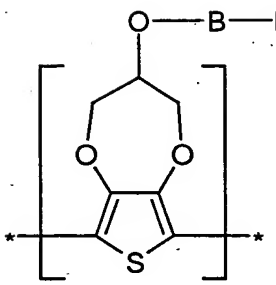


(ii).

10. Polythiophenes according to Claim 9, characterized in that they comprise recurring units of the formulae (IV-a) and/or (IV-b),



(IV-a)



(IV-b)

where

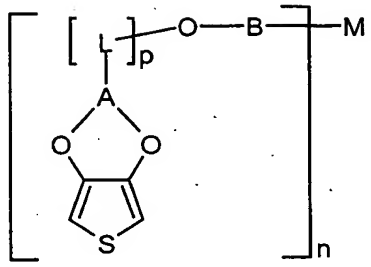
M and B are as defined in Claim 2.

11. Polythiophenes according to Claim 9, characterized in that they are cationically and electrically conductive and contain bound anions as counterions to balance the positive charge.

12. Polythiophenes according to Claim 11, characterized in that the counterions are polyanions of polymeric carboxylic acids or polymeric sulphonic acids.

13. Polythiophenes according to Claim 9, characterized in that they are uncharged and semiconducting.

14. Process for preparing polythiophenes according to Claim 9, comprising oxidatively polymerizing electrochemically compounds of the formula (I),

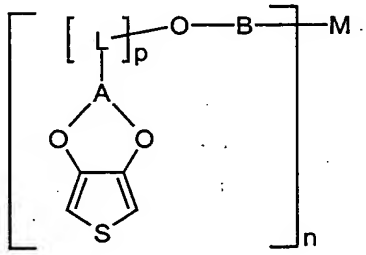


(I)

where

A, L, p, M and B are as defined in Claim 2.

15. Process for preparing polythiophenes, comprising oxidatively polymerizing electrochemically compounds of the formula (I),



(I)

where

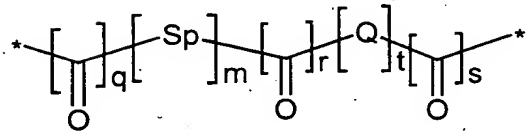
A is a C_1-C_5-alkylene radical which is substituted at any point by a linker L and may bear further substituents,

L is a methylene group,

p is 0 or an integer from 1 to 6,

n is an integer from 1 to 8 and

B is a bridging group of the formula (B)



(B)

where

q is 0 or 1,

r, s are each 0 or 1, with the proviso that when r is 1, s is 0 and vice versa or both may be 0,

t is 0 or 1,

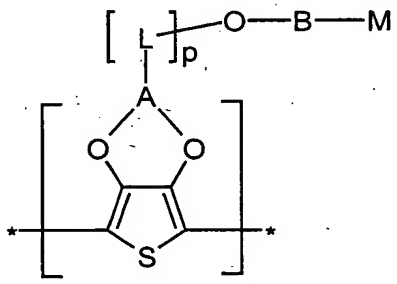
Sp is a spacer selected from the group consisting of substituted and unsubstituted linear or cyclic C_1-C_{20}-alkylene groups, C_5-C_{20}-arylene groups, C_2-C_{20}-heteroarylene groups in which from one to three heteroatoms selected from among N, O and S can additionally be present in the heteroaromatic ring or ring system, C_6-C_{20}-aralkylene groups, C_2-C_{200}-oligoether and –polyether groups,

m is 0 or 1,

Q is O, S or NH, and

M is as defined in Claim 2.

16. Polythiophenes characterized in that they comprise recurring units of the formula (IV),



(IV)

where

A, L, p and B are as defined in Claim 15 and

M is as defined in Claim 2,

obtainable by a process according to Claim 15.

17. A process for preparing electrical or electronic components, light-emitting components, for antistatic coating, in optoelectronics or in solar energy technology comprising incorporating polythiophenes according to Claim 9.

18. A process for preparing electrical or electronic components, light-emitting components, for antistatic coating, in optoelectronics or in solar energy technology comprising incorporating polythiophenes according to Claim 16.

19. A process for preparing conductive layers comprising incorporating the polythiophenes according to Claim 9.

20. A process for preparing conductive layers comprising incorporating the polythiophenes according to Claim 16.